

### Homework #4 Solutions

Brenda and Dylan, who dated in the early 90's for about 2 years, are now just really good friends. Dylan still lives in Beverly Hills, while Brenda lives in London. Fortunately, both of them have cell phone plans that include unlimited international text messaging.

1. Just last week, Brenda sent this text message to Dylan.

Brenda: omg its minus 20 C this morning!

Help Dylan convert the temperature into degrees Farenheit.

$$F = (1.8)(-20) + 32 = -4$$

So it's 4 degrees Farenheit.

2. After converting, Dylan texts back.

Dylan: that is SO cold. everythings nice here. except bamboo flooring costs \$8 per square foot. Help Brenda convert the price of bamboo flooring into £ (British pounds) per square meter.

( 1 meter = 3.28 feet, 1 USD = .558 £)

$$\left(8 \frac{\text{USD}}{\text{ft}^2}\right) \left(\frac{.558\text{£}}{1 \text{ USD}}\right) \left(\frac{3.28 \text{ ft}}{1 \text{ m}}\right) \left(\frac{3.28 \text{ ft}}{1 \text{ m}}\right) = 48.03 \frac{\text{£}}{\text{m}^2}$$

3. Brenda realizes the financial responsibility associated to installing bamboo flooring and texts Dylan.

Brenda: expensive! we went 2 Hibiscus 4 Bran's bday. it came to 65 pounds, but we just left 75. Help Dylan calculate what percentage Brenda tips.

The tip is calculated using the 65 £. So the 75 £ is the tip percentage more than 65 £. That translates to the equation  $75 = x(65)$  where  $x$  is the decimal representation of 100% plus the tip percentage.

$$x = \frac{75}{65} = 1.1538$$

meaning that 75 is 115.38% of 65; that is, 75 is 15.38% more than 65. So Brenda tipped 15.38%.

4. Disappointed by Brenda's tipping habits, Dylan texts Brenda.

Dylan: onud. i always tip 22%. yesterday i left a total of \$13 on the table for my meal. Help Brenda calculate how much Dylan's meal cost before tip.

( onud = oh no you didn't )

Let  $x$  be the cost of the meal before tip. Then 13 is 22% more than  $x$ . That means that 13 is 122% of  $x$ . This translates to the equation  $13 = (1.22)x$ . Solving for  $x$ , we get

$$x = \frac{13}{1.22} = 10.66$$

So Dylan's meal cost \$10.66 before tip.

5. Brenda is obviously annoyed that Dylan is judging her.

Brenda: myob, i can tip what i want. besides, prices @ Hibiscus R rising. last month they went up by 9% and this month they went up by 4%.

Help Dylan compute the total percentage increase in prices at Hibiscus.

( myob = mind your own business )

A 9% increase is calculated by multiplying the original amount by 1.09. A 4% increase is calculated by multiplying that number by 1.04. So the overall percentage increase is calculated by multiplying 1.09 and 1.04.

$$(1.09)(1.04) = 1.1336$$

So the overall percentage increase is 13.36%.

6. Not wanting to upset Brenda further, he agrees with her.

Dylan: imho prices R increasing everywhere. my fave meal's price used to be \$8.95, which is 12% less than it costs now. i have to go, my movie is about to start.

Help Brenda figure out how much Dylan's favorite meal costs now.

Brenda: ttyl

( imho = in my humble opinion, ttyl = talk to you later )

Let  $x$  be the cost of Dylan's favorite meal now. Then 8.95 is 12% less than  $x$ . That is, 8.95 is 88% of  $x$ . This translates to the equation  $8.95 = (.88)x$ . Solving for  $x$  gives

$$x = \frac{8.95}{.88} = 10.17$$

So Dylan's favorite meal now costs \$10.17.